

Panel

Parteneriate europene și istorii de succes

- Parteneriate europene și istorii de succes - *Dr. Carmen Moldovan, INCD pt. Microtehnologie, IMT-București;*
- Istории de succes m-ERA.NET – *Dr. Mihai Anastasescu, Institutul de Chimie Fizică „Ilie Murgulescu”;*
- Proiecte de succes în ORIZONT 2020 – *Dr. Adrian Dinescu, INCD pt. Microtehnologie, IMT-București;*
- Prezentare proiect ECSEL Moore4Medical – *Dr. Bogdan Fîrtat, INCD pt. Microtehnologie, IMT-București.*



CESMIN - CEntru Suport pentru cooperare europeană în Micro- și Nanotehnologii

Sesiune de informare cu privire la Programul Cadru
ORIZONT EUROPA (2021-2027), București, 9 septembrie 2020

PARTENERIATE EUROPENE și istorii de succes

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CESMIN, Cod SMIS2014+ 107894, www.imt.ro/CESMIN



Împreună putem îndrăzni mai mult!

Proiect co-finanțat din Fondul European de Dezvoltare Regională prin Programul Operațional Competitivitate 2014-2020 (POC)

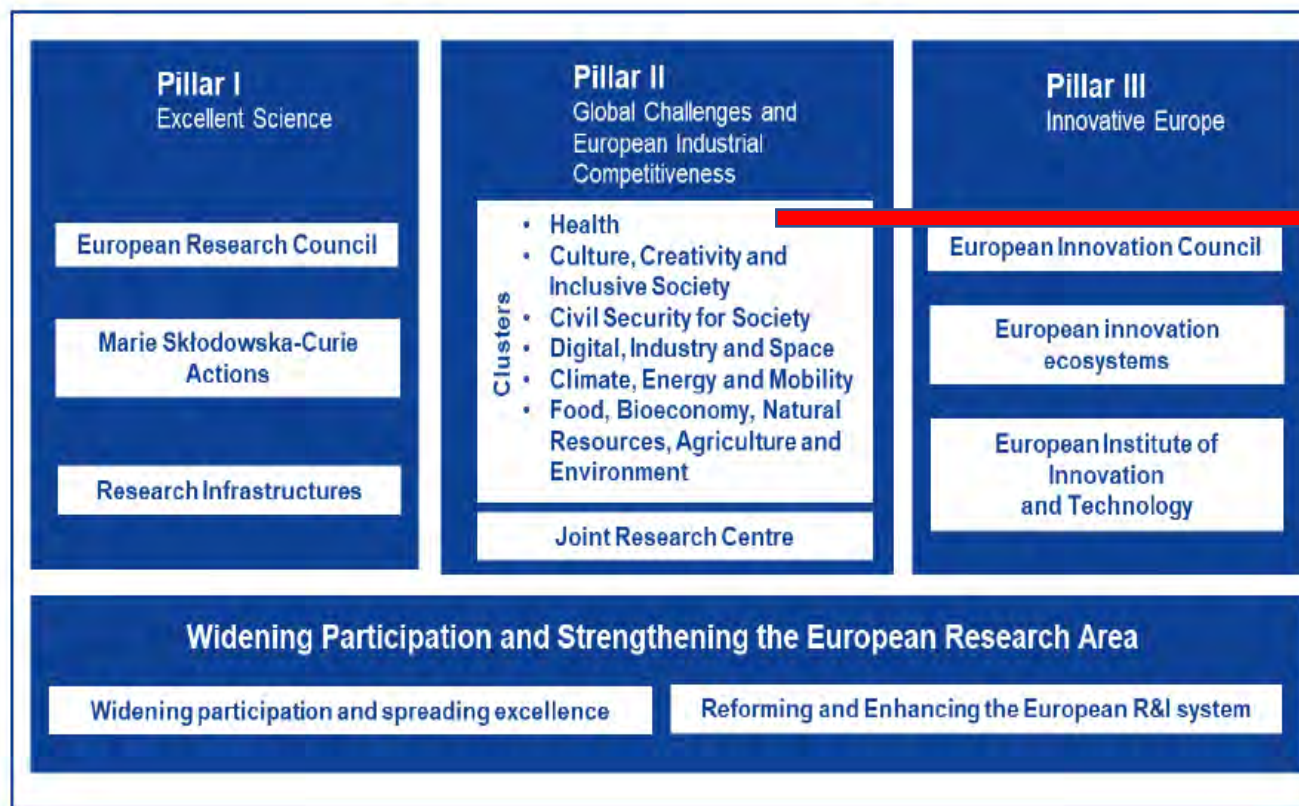


Outline:

- Prezentare generala a tematicii de parteneriate in ORIZONT EUROPA
- Identificarea oportunitatilor pentru Romania
- Prezentarea propunerilor de tematici si initiative
“ transnationale” in ORIZONT EUROPA
- Prezentarea chestionarului ”participarea Romaniei in parteneriate europene” si votarea acestuia
- Istории de succes in H2020 si oportunitati de continuare
- Concluzii

STRUCTURA “ORIZONT EUROPA”

Preliminary Horizon Europe Structure



- HEALTH
- DIGITAL INDUSTRY and SPACE
- CIVIL SECURITY
- CLIMATE CHANGE and MOBILITY
- FOOD, AGRICULTURE, ENVIRONMENT
- BIOECONOMY
- CULTURE, CREATIVITY, Inclusive Society



Background

Orientations towards the first Strategic Plan for Horizon Europe

https://ec.europa.eu/research/pdf/horizon-europe/ec_rtd_orientations-towards-the-strategic-planning.pdf

The Strategic Planning process will focus in particular on **Pillar II, “Global Challenges and European Industrial Competitiveness”**, covering also other relevant activities throughout Horizon Europe. The Strategic Planning process will prepare the Strategic Plan for Horizon Europe for 2021-2024 and facilitate the implementation of Horizon Europe, by setting out **key strategic orientations for the support to research and innovation**.

Tinte Strategice de Dezvoltare

The United Nations Sustainable Development Goals





CLUSTERS

Pillar II - Global Challenges and European Industrial Competitiveness

“Cluster 1, ‘Health’, aims to promote and protect **human health and well-being**, prevent diseases and decrease the burden of diseases and disabilities on people and communities, support the transformation of health care systems in their efforts towards fair access to innovative, sustainable and high quality health care for everyone, and foster an innovative, sustainable and globally competitive European health industry.

Cluster 2, ‘Culture, Creativity and Inclusive Society’ aims to meet EU goals and priorities on enhancing democratic governance and citizens participation, and on the **safeguarding and promotion of cultural heritage**, and to respond to multifaceted social, economic, technological and cultural transformations.

Cluster 3, ‘Civil security for Society’, aims to contribute to **protecting the EU and its citizens from the threats posed by crime and terrorism** (including in the cyber environment) and from the impacts of natural and man-made disasters”.



“Cluster 4, ‘Digital, Industry and Space’ will advance key enabling, digital and space technologies, underpinning the transformation of our economy and society, support the digitisation and transformation of European industry and contribute to securing global industrial leadership and autonomy / sovereignty in terms of technologies and resources.

Cluster 5, ‘Climate, Energy and Mobility’, aims to fight climate change while improving the competitiveness of the energy and transport industries as well as the quality of the services that these sectors bring to society.

Cluster 6, ‘Food, Bioeconomy, Natural Resources, Agriculture and Environment’ will advance knowledge, expand capacities and deliver innovative solutions to accelerate the transition towards the sustainable management of natural resources (such as biodiversity, water and soils). This will include measures for: climate adaptation and climate neutrality of sustainable primary production (agriculture, forestry, fisheries and aquaculture), value chains, food systems and biobased industries, and reducing environmental degradation and pollution”.



Cluster 4 DIGITAL INDUSTRY and SPACE

Key Digital Technologies (KDT)

Electronic and photonic (light based technologies) components, and the software that defines how they work as part of a system, are the Key Digital Technologies. The overarching objective of the KDT partnership is to support the digital transformation of all sectors of the economy and society, make it work for Europe and address the [European Green Deal](#).

By 2030, **EU leadership in KDT** will reinforce industrial strongholds having seized emerging opportunities to **establish technological sovereignty** and boost competitiveness.

The EU aims to be **climate neutral** in 2050. We proposed a [European Climate Law](#) to turn this political commitment into a legal obligation.

Reaching this target will require action by all sectors of our economy, including investing in environmentally-friendly technologies supporting industry to innovate rolling out cleaner, cheaper and healthier forms of private and public transport decarbonising the energy sector ensuring buildings are more energy efficient working with international partners to improve global environmental standards.



I. KEY Enabling technologies ensuring European leadership and autonomy

4.1 Manufacturing Technologies

Innovative manufacturing technologies will contribute to sustainable prosperity for all and reinforced strategic advantages in terms of increased productivity, enhanced job quality and reduced environmental footprints. They are also directly relevant for activities in clusters related to health, energy and mobility.

4.2 Key Digital Technologies

Emphasis will be put on trusted electronic components and systems. Embedded security, reliability and usability, as well as easier programmability, throughout products and services life-cycles, will contribute to citizens' confidence in digital technologies.

4.2.2 Key Digital Technologies Relevance and positioning in a national context The results of the Member State consultation confirm strongly the overall relevance of the proposed Key Digital Technologies (KDT) partnership. 96% of member states consider it relevant for their national policies and priorities, as well as for their industry, research organisation and universities.



4.3 Advanced Materials

New material development has historically been closely linked to significant industrial and societal advances and remains a key technology for responding to virtually every global challenge. Material science and technology will also be essential to the “**European Green Deal**”, and in particular its challenges of **climate neutrality, transition to a circular economy, and a zero pollution Europe**”.

4.4 Emerging Enabling Technologies

Fascinating technologies that we could not imagine even a few years ago hold the potential to revolutionise the way in which we live and work. New enabling technologies will be needed as current ones become obsolete or clash with planetary boundaries. By exploring the potential of such technologies at an early stage, Europe can secure leadership in key enabling technologies of the future. The objective of these activities will be to facilitate the early development (at low TRLs) of a limited number of new enabling technologies and feed the innovation pipeline.



4.5 Artificial Intelligence and Robotics

Driven by increased computing power, the availability of large amounts of data (the essential raw material for innovation, competitiveness and growth) and progress in algorithms, smart devices and smart robots, Artificial Intelligence (AI) is shaping up as one of the most strategic technologies of the 21st century. The way we approach AI will define the world we live in.

4.6 Next Generation Internet

The Internet has become the critical infrastructure for Europe as many social and economic activities depend on it.

4.7 Advanced Computing and Big Data

Today, Europe critically depends on foreign supercomputing technologies that are essential for scientific and industrial innovation; and its supercomputing supply industry provides only around 5% of supercomputing resources worldwide, whereas Europe consumes around 30% of these resources.

4.8 A globally competitive space sector reinforcing EU sovereignty

(II) Accelerating economic and societal transitions 4.9 Circular Industries;
4.10 Low-carbon and Clean Industries; 4.11 New services from Space for the EU society and economy



Noi instrumente pentru maximizarea impactului

Partneneriatele Europene sunt initiative unde UE împreună cu parteneri publici și privați agreează să susțină împreună dezvoltarea și implementarea unui program de cercetare – inovare ”.

Parteneri posibili: industrie, Universități, organizații de cercetare , organizații care oferă un serviciu public cu competență locală, regională, națională sau internațională, fundații, ONG –uri.



Parteneriate

Parteneriatele sunt o tema importanta in ORIZONT EUROPA deoarece; reprezinta 25% din bugetul total si 50% din bugetul PILON II .

Scopul acestora: impactul concret al Cercetarii - Inovarii in societate, clima si economy.

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en



Tipuri de parteneriate

- The aim of European partnerships with EU and associated countries, the private sector, foundations and other stakeholders is to deliver on global challenges and modernize industry.

There are 3 types.

- **Co-programmed European Partnerships**

These are partnerships between the Commission and private and/or public partners. They are based on memoranda of understanding and/or contractual arrangements.

- **Co-funded European Partnerships using a programme co-fund action**

Partnerships involving EU countries, with research funders and other public authorities at the core of the consortium.

- **Institutionalised European Partnerships**

These are partnerships where the EU participates in research and innovation funding programmes that are undertaken by EU countries.

These partnerships require legislative proposals from the Commission and are based on a Council Regulation ([Article 187](#)) or a Decision by the European Parliament and Council ([Article 185](#)). They are implemented by dedicated structures created for that purpose.

[EIT Knowledge and Innovation Communities](#) (KICs) are also institutionalised partnerships. EIT KICs aim to address skills shortages and are already established under Horizon 2020.



Tipuri de parteneriate – II

Ongoing **Article 185** initiatives under Horizon 2020. Examples below (Decision of European Parliament and the Council May 2014)

- [EUREKA](#) and [COST](#).
- Ambient Assisted Living (AAL)
- EUROSTARS
- European Metrology Programme for Innovation and Research (EMPIR)
- European and Developing Countries Clinical trials Partnership (EDCTP)
- Partnership for Research and Innovation in the Mediterranean Area (PRIMA)

Tipuri de parteneriate - III

Article 187 of the Treaty on the Functioning of the European Union (TFEU) specifies that the EU may set up joint undertakings (JUs) or any other structure necessary for the efficient execution of EU research, technological development and demonstration programmes.

- Article 187 TFEU has been used under the EU's seventh framework programme for research and technological development (FP7) and the Horizon 2020 research framework programmes to set up, in particular, public-private partnership bodies in order to integrate industrial research in specific areas.

Partnerships with industry

Innovative Medicines Initiative
Fuel Cells and Hydrogen
Clean Sky 2
Bio-based Industries
Electronic Components and Systems for European Leadership (ECSEL)
Shift2Rail
EuroHPC, High Performance Computing

Public-public partnerships

Joint Programming Initiatives
European national research programmes are among the best in the world, but they cannot tackle some of today's major societal challenges alone (ERA Net)
[ERA-NET Cofund instrument](#)



Parteneriate

În vara lui 2019, Comisia Europeană a propus spre dezbateri 44 de parteneriate.

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en#partnership-candidates-and-contact-details

România va trebui să decidă care dintre acestea răspund nevoilor de dezvoltare socială și economică și în plus există resurse umane și infrastructuri pentru derularea cu succes.

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en#partnership-candidates-and-contact-details

5.2 List of candidates for European Partnerships proposed by the European Commission

Preliminary list of candidates for European Partnerships in Pillar II, III and cross-pillar, and short description of what the partnership stands and aims for		Currently envisaged implementation mode(s)	Predecessors	Composition of partners	Relevance for clusters/pillars
Health	1. EU-Africa Global Health Partnership Increase health security in sub-Saharan Africa and Europe, by accelerating the clinical development of effective, safe, accessible, suitable and affordable health technologies as well as health systems interventions for infectious diseases in partnership with Africa and international funders.	Article 185 or Article 187 or Co-programmed or co-funded	EDCTP2 (Art.185)	MS/AC and 3 rd countries (i.e. sub-Saharan African countries) Foundations/industry on an ad-hoc basis	Cl.1
	2. Innovative Health Initiative A collaborative platform bringing the pharmaceuticals, diagnostics, medical devices, imaging and digital sectors together for precompetitive R&I in areas of unmet public health need, to accelerate the development and uptake of people-centred health care innovations.	Article 187 or Co-programmed	IMI2 (Art.187)	Industry, other organisations on an ad hoc basis	Cl.1
	3. European partnership for chemicals risk assessment Bring together the European risk assessment and regulatory agencies to implement a joint research agenda, to ensure their capacity to deal with persistent or emerging challenges. It will promote the uptake of new methods, tools, technologies and information in chemical hazard identification and risk assessment and as part of this, sustain the development and use of human biomonitoring capacities in Europe.	Co-funded	Human Bio-monitoring and a number of other actions	MS/AC, National agencies, Ibd the role of the corresponding EU agencies	Cl.1, 4, 6
	4. Pre-clinical/clinical health research The partnerships aims for establishing and implementing a strategic research agenda and joint funding strategy between major European public funders in health research.	Co-funded	Around 10 previous and current ERA-NET actions	MS / AC / 3 rd countries	Cl.1, 6
	5. Large-scale innovation and transformation of health systems in a digital and ageing society Improving health and care models in an ageing, data-driven and digital society, shifting to holistic health promotion and person-centred care approaches through health policy and health systems research.	Co-funded	AAL2 (Art.185), JPI 'More Years, Better Lives' and others	MS / AC Civil Society organisations	Cl.1
	6. Personalised Medicine To align national research strategies, promote excellence, reinforce the competitiveness of European players in Personalised Medicine and enhance the European collaboration with non-EU countries	Co-funded	ERA-PerMed and actions in support of ICPeMed	MS / AC	Cl.1
	7. Rare Diseases To improve the integration, the effectiveness, the production and the social impact of research on rare diseases through the development, demonstration and promotion of Europe/ world-wide production, sharing and exploitation of research and clinical data, materials, processes, knowledge and know-hows.	Co-funded	EJP Rare diseases (until 2023)	MS/AC /3 rd countries, civil society organisations, EU research infrastructures	Cl.1

Digital, Industry and Space	8. High Performance Computing The EuroHPC Joint Undertaking has as its mission to establish an integrated world-class supercomputing & data infrastructure and support a highly competitive and innovative HPC and Big Data ecosystem.	Article 187 or Co-programmed	EuroHPC (Article 187)	Industry and MS/AC	Cl.4
	9. Key Digital Technologies Maintain the European Electronics Components and Systems industry at the technological forefront and contribute to boosting the EU's competitiveness, including that of its industries by providing essential components and software as well as the related manufacturing infrastructure in Europe and national strategies.	Article 187 or Co-programmed	ECSEL (Article 187), part of Photonics cPPP	Industry and MS/AC (research funders)	Cl.1,2, 4,5
	10. Smart Networks and Services Enabling the infrastructure basis in terms of key technologies and deployment for Next-Generation Internet services used by citizens and for "smart" services required by vertical sectors such as transport, energy, manufacturing, health and media.	Article 187 or Co-programmed	cPPP 5G	Industry and academia in the field of connectivity	Cl.1,4, 5
	11. AI, data and robotics The partnership on AI will help structuring the European AI community, develop a strategic research agenda and federate efforts around a topic that holds great potential to benefit our society and economy	Co-programmed	cPPPs on Big Data and robotics	Industry, academia, end-users, and civil society	Cl.3
	12. Photonics Europe Photonics is one of the key drivers for tomorrow's digital markets and the development of the digital European society as a whole. Photons will replace electrons in many of our most important technologies and digital products.	Co-programmed	cPPP Photonics21	Industry	Cl.1,2, 4,5,6
	13. Clean Steel - Low Carbon Steelmaking The partnership on clean steel will provide a EU critical mass to ensure and in particular to upscale breakthrough technology, facilitate joint vision development, agenda setting and synergies of EU different funds. It will also contribute to the evolution to a programming approach in R&I in the energy intensive industry.	Co-programmed	Fuel cell and Hydrogen (Article 187) cPPP Spire	Industry	Cl.4, 5
	14. European Metrology Accelerating the global lead in metrology research that Europe currently holds, and creating sustainable metrology networks for highly competitive and emerging metrology areas, while incorporating a wide range of stakeholders.	Article 185 or co-funded	EMPIR (Article 185)	MS/AC (National Metrology Institutes)	Cl.1,2, 4,5,6
	15. Made in Europe Towards a competitive discrete manufacturing industry with a world-leading reduction of the environmental footprint whilst guaranteeing the highest level of well-being for workers, consumers and society.	Co-programmed	cPPPs Factories of the Future, part of Robotics and Photonics	Industry	Cl.1,5, 6
	16. Carbon Neutral and Circular Industry Transforming European process industries to make them carbon neutral by 2050, to turn them into circular industries together with material and recycling industries, and to enhance their technological leadership at global level and international competitiveness.	Co-programmed	cPPP SPIRE	Industry CSO/NGOs	Cl.4,5, 6
	17. Global competitive space systems Perform fast and structured advances on selected innovative critical space systems R&I roadmaps such as for example reusability, in orbit demonstration, assembly and manufacturing, so as to acquire global industrial leadership	Co-programmed	n.a.	Industry MS/AC	Cl.4



Climate, energy and mobility	18. Transforming Europe's rail system Define, design and implement the full spectrum of rail research and innovation activities, from fundamental research to large-scale demos, to trigger a major transformation of the railway system as the backbone of an integrated and sustainable mobility in Europe, maximising socio-economic benefits	Article 187 or Co-programmed	Shift to Rail (Article 187)	Industry, Railway Operators and Infrastructure Managers	CL5
	19. Integrated Air Traffic Management Enhance the performance of the Union's air traffic management system as technological pillar of the Single European Sky (SES) and more broadly of the air transport sector as a whole.	Article 187 or Co-programmed	SESAR (Article 187)	Industry, Eurocontrol	CL4, 5
	20. Clean Aviation To accelerate and amplify the impact of the European aviation research and innovation on Energy Union, Mobility Package, renewed industrial policy strategy and EU GHG and air pollution emissions, including for the 2050 horizon and noise regulations, tackling energy and climate-change challenges, European industry competitiveness, "first mover advantage" on international markets, as well as a sustainable mobility for society.	Article 187 or Co-programmed	Clean Sky 2 (Article 187)	Industry	CL4, 5
	21. Clean Hydrogen Accelerating the market entry of nearly-zero GHG-emission hydrogen-based technologies across energy, transport & industrial end-users, covering the full value chain for competitive hydrogen and fuel cells technologies, ensuring pole position for Europe to realise the potential of hydrogen technologies at scale.	Article 187 or Co-programmed	Fuel Cell and Hydrogen (Article 187)	Industry	CL4, 5
	22. Built environment and construction Generate the necessary technology and socio-economic breakthroughs for an improved built environment to support the achievement of EU 2050 decarbonisation goals and the transition to clean energy and circular economy, while improving quality of living, health and wellbeing for people, ensuring a high degree of mobility and creating competitive ecosystems for business.	Co-programmed	Energy-efficient Buildings cPPP	Industry	CL4, 5
	23. Towards zero-emission road transport (2ZERO) Accelerating the transformation of the road transport system into zero-emission mobility through world-class European R&I and industrial system, with a competitive new generation of light weight, energy efficient and affordable vehicles and support measures to facilitate their rapid deployment	Co-programmed	European Green vehicle initiative (cPPP)	Industry	CL4, 5
	24. Mobility and Safety for Automated Road Transport Long-term framework to the strategic planning of research and pre-deployment programmes for connected and automated driving on roads at EU and national levels in a systemic approach (vehicle, interactions, infrastructure, technical and non-technical enablers and societal impact)	Article 187 or Co-programmed	related: 5G, Big Data, ECSEL, S2R, SESAR, batteries, 2ZERO	Industry	CL4, 5
	25. Batteries: Towards a competitive European industrial battery value chain Development of a world-class European R&I system on batteries, bringing together activities to develop a coherent strategic programme, in cooperation with industrial players and research community, making a substantial contribution to fulfilling the Paris Agreement, and enhance the competitiveness of current and emerging European industries along the battery value chain.	Co-programmed	n.a.	Industry	CL4, 5
	26. Clean Energy Transition Respond to the call for decarbonisation in medium- and long-term in a holistic way, synthesizing all fragmented actions to allow for greater integration of relevant research & innovation areas and provide greater impact.	Co-funded	Around 10 existing ERA-NET Cofund actions	MS/AC (RFOs and RPOs)	CL5

Food, Bio-economy, Natural Resources, Agriculture and Environment	27. Accelerating farming systems transition: agro-ecology living labs&research infrastructures The partnership will enable to grasp short to long-term agroecological processes at landscape level and accelerate the transition towards sustainable climate and environment-friendly farming practices by boosting place-based innovation in a co-creative environment accelerating the adoption of innovation by farmers and other actors.	Co-funded	n.a.	MS/AC (RFOs/regional authorities)	CL1.5,6
	28. Animal health: Fighting infectious diseases The partnership aims to bring sustainable and innovative solutions to tackle infectious animal diseases, including those transmitted between animals and humans (zoonoses) and to contribute to the fight against anti-microbial resistance, implementing the One Health concept. It will support sustainable animal production, reduce trade barriers, and protect consumers.	Co-programmed, Co-funded	A small number of current ERA-NETs	Either MS/AC or Industry, and regulatory agencies	CL1,6
	29. Environmental Observations for a sustainable EU agriculture The objective of the initiative is to support the delivery of a sustainable CAP by improving agricultural practices and farm profitability and using the possibilities the current digital/data techniques in the field. New services and applications will be developed for EU's farming sector enabling more efficient, environmentally friendly and profitable production systems.	Co-funded	EuroGEOSS	MS/AC (research funders, national/regional authorities)	CL4,6
	30. Rescuing biodiversity to safeguard life on Earth Halting biodiversity loss, maintaining and restoring natural capital is essential for the transition towards sustainability, climate neutrality and for respecting the planetary boundaries. The partnership aims to deploy solutions to stop the ongoing mass extinction of species caused by human activity by upscaling, aligning and integrating European R&I efforts and investment, guiding actions to protect, restore and sustainably manage ecosystems and natural capital.	Co-funded	ERA-NET Biodiversity, EKLIPSE, ESMERALDA	MS/AC (RFOs, national/regional authorities)	CL1,2,5,6
	31. A climate neutral, sustainable and productive Blue Economy The objective is to sustainably unlock, demonstrate and harvest the full potential of Europe's Oceans and Seas through a well-structured, sustained and simplified joint effort in this borderless domain with the aim to support the transition to a strong, climate neutral and sustainable blue economy by 2050.	Co-programmed or Co-funded	BONUS, MARTERA, JPI Oceans, BlueBio	MS/AC (research funders, national/regional authorities), EU Agencies	CL1,2,4,5,6
	32. Safe and Sustainable Food System for People, Planet & Climate Fixing our food system is central to the transition to a 'Sustainable Europe by 2030', and key to meeting the IPCC climate targets and operating within key planetary boundaries. This partnership will deploy FOOD 2030 and deliver the Food Safety System of the future, ensuring consumer trust, safety, quality and traceability; (and) Sustainable Food Systems, providing alternative proteins sources, dietary shifts, the halving of food waste, and exploit the potential of microbiomes for sustainable and healthy food systems.	Co-programmed or Co-funded	FACCE Surplus, ICT Agri2, Core-Organic, ERA GAS, SUSAN, ERA HDL, SusFood2	MS/AC (research funders, national/regional authorities), EU Agencies	CL6
	33. Circular bio-based Europe: Sustainable, inclusive and circular bio-based solutions Sustainable and climate-neutral solutions accelerating the transition to a healthy planet, where renewable products and nutrients will be produced from biomass and waste instead of non-renewable fossil and mineral resources. This creates awareness, capacities and appropriate structures extending beyond industry partners, mobilising producers of biological resources and end-users.	Art.187 or Co-programmed	BBi JU	MS/AC (research funders, national/regional authorities)	CL4,5,6
	34. Water4All: Water security for the planet Secure all water demands in terms of quality and quantity, protect both economic and natural systems, as well as people from water-related hazards. Support the transition to a healthy planet and to ensure a resilient Energy Union. EU climate neutral policy and respect of planetary boundaries.	Co-programmed or Co-funded	Water JPI	MS/AC (research funders, national/regional authorities)	CL1,2,4,5,6



UNIUNEA EUROPEANĂ



Instrumente Structurale
2014-2020

Partnership candidates: Other Pillars	35. Innovative SMEs The initiative aims support to transnational market-oriented research projects initiated and driven by innovative SMEs. Innovative SMEs shall take the lead and exploit commercially the project results, thus improving their competitive position. Research organisations, universities, other SMEs, large companies and others actors of the innovation chain can also participate.	Art.185 or co-funded	Eurostars-2	MS/AC (SMEs)	Pillar III
	36. European Science Cloud (EOSC) The EOSC 2.0 partnership is aimed at facilitating the EOSC implementation activities in its second phase. After 2020 the EOSC will become more stakeholder-driven, with a permanent governance structure in place, and would benefit from a co-programmed financing mechanism.	Co-programmed or co-funded	n.a	MS/AC, Academia	Cross-Pillar
	37. EIT Climate-KIC EIT Climate-KIC is a network of universities, businesses and research organisations delivering solutions mitigate or adapt to climate change and accelerate the deployment of new solutions to market.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL5
	38. EIT InnoEnergy It aims at building a sustainable, long-lasting operational framework among the knowledge triangle actors in the energy sector, with the goal of fostering the generation of new talents, the emergence and deployment of new innovative solutions and the creation and development of companies.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL5
	39. EIT Digital EIT Digital's mission is to drive digital innovation and develop entrepreneurial talent in order to enhance both economic growth and quality of life across Europe.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL4
	40. EIT Health EIT Health is a network of universities, businesses and research organisations delivering solutions to enable European citizens to live longer, healthier lives by promoting innovation.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL1
	41. EIT Food EIT Food is a network of universities, businesses and research organisations delivering solutions to develop a highly skilled food sector. EIT Food collaborates with consumers to provide products, services and new technologies, which deliver a healthier lifestyle for all European citizens.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL5
	42. EIT Manufacturing EIT Manufacturing will be a network of universities, businesses and research organisations delivering solutions to transform today's industrial forms of production towards more knowledge intensive, sustainable, low-emission, trans-sectoral manufacturing and processing technologies, to realise innovative products, processes and services.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL4
	43. EIT Raw materials EIT RawMaterials is a network of universities, businesses and research organisations delivering solutions to boost competitiveness, growth and attractiveness of the European raw materials sector via radical innovation, new educational approaches and guided entrepreneurship.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL4
	44. EIT Urban Mobility EIT Urban Mobility will be a network of universities, businesses and research organisations delivering solutions to develop a greener, more inclusive, safer and smarter urban transport system.	EIT-KIC	n.a	MS/AC, Industry, Academia	Pillar III CL5

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Concluzii

Oportunitati de participare la ORIZONT Europa:

Identificare tematica potrivita activitatii

Identificare instrumente (tipul de proiect)

Identificare parteneri

Urmărirea workprogramme; prima etapa 2021-2024

Sprijinirea participării prin Centrele Suport, NCPs, diseminare largă a informației

Corelații tematice ORIZONT Europa cu Programele Naționale.

Participarea României la Parteneriatele Europene într-un mod transparent. Analiza impactului după încheierea programelor

Importanța participării prin prisma vizibilității și recunoașterii internaționale, accesul și asimilarea de noi tehnologii, training tehnologic și de colaborare în proiecte, exemple de bune practici

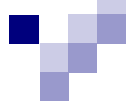


M-ERA.net Projects (2017-2022)

**“Ilie Murgulescu” Institute of Physical Chemistry (ICF)
of the Romanian Academy**

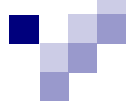
Surface Chemistry and Catalysis Laboratory

Dr. Mariuca Gartner – Head of Laboratory



M-ERA.NET Transnational Call 2014

- **Title:** Sustainable autonomous system for nitrites/nitrates and heavy metals monitoring of natural water sources - *WaterSafe*
- **Coordinator Organisation:** “Ilie Murgulescu”
Institute of Physical Chemistry of the
Romanian Academy
- **Project Coordinator:** Dr. Mariuca Gartner



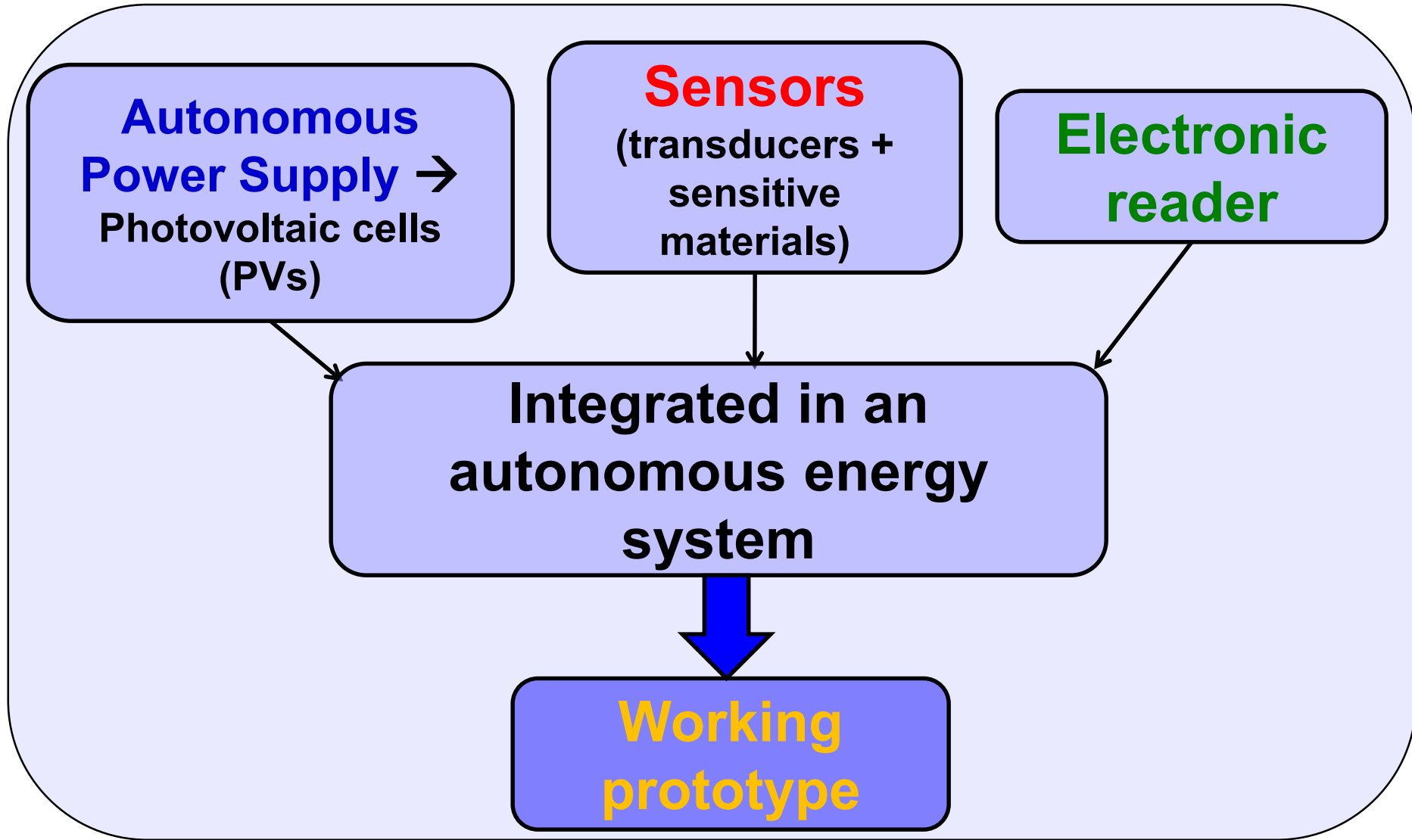
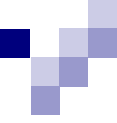
CONSORTIUM OVERVIEW

- **Coordinator (P1):** “Ilie Murgulescu” Institute of Physical Chemistry of the Romanian Academy (ICF) – Dr. Mariuca Gartner
- **Partner 2:** NANOM MEMS SRL - Dr. Marin Gheorghe
- **Partner 3:** National Institute for R&D in Microtechnology (IMT) Dr. Carmen Moldovan
- **Partner 4:** Transilvania University of Brasov – Prof. Anca Duta
- **Partner 5:** Institute for Technical Physics and Materials Science, Centre for Energy Research, Hungarian Academy of Sciences - Dr. Miklós Fried
- **Partner 6:** University of Pannonia – Prof. Ferenc Vonderviszt



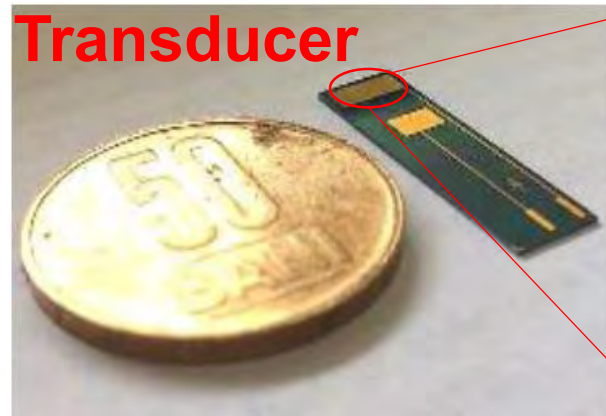
Project Summary

- **Aim:** The project developed a new energy autonomous system based on micro electrochemical sensors and ultra-thin solar cells, for concentration measurement of different harmful species in natural water sources (nitrates/nitrites and heavy metals).
- **Call Topic:** Materials for Sustainable and Affordable Low Carbon Energy Technologies
- **Total Project Costs:** 459,950 (Eur)
- **Requested Funding:** 443,700 (Eur)
- **Technology Readiness Level:** TRL2 → TRL6

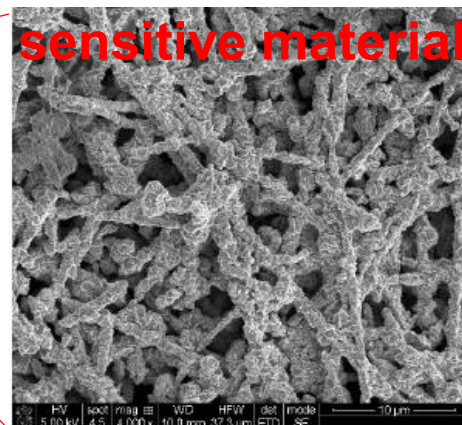




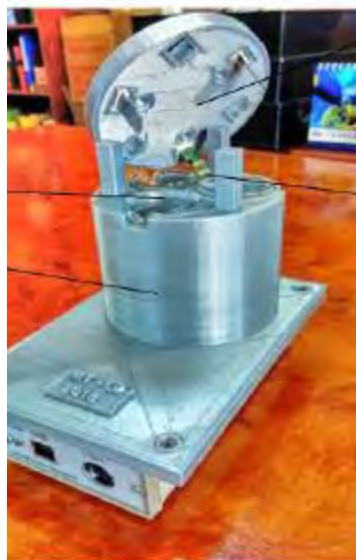
PVs



Transducer



sensitive material



Electrochemical cell



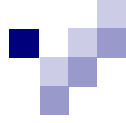
Integrated system (prototype)



Dissemination & Impact

- 2 Book chapters
- ISI papers (4) → *Sens. & Act. B, Catal. Today*
- Proceedings (2)
- Conferences (31)
- Workshops (3)
- PhDs → (3) *1 in RO; 2 in HUN*

Impact → (i) Scientific; (ii) Technological;
(iii) Economic; (iv) Social



Strong points (Conclusions)

- Consortium partners (Academic and R&D Inst., Firm, Universities)
- SME involvement
- International cooperation (EU level)
- Achievements → System integration
(PVs, Sensors, Electronics)
- Dissemination (ISI papers with high IF)
- PhDs theses (in project topic)

Thank you for your attention!



IMT Bucuresti – Istории de succes in H2020

Dr. Miron Adrian Dinescu,
Director general IMT Bucuresti



UNIUNEA EUROPEANĂ



București, 9 septembrie 2020

New!

Open innovation test bed for developing safe nano-enabled bio-based materials and polymer bionanocomposites for multifunctional and new advanced applications, BIONANOPOLYS

Type of Action: **IA**; Call: H2020-NMBP-TO-IND-2020-twostage; GA preparation; Project no. 953206; Coordinator: INSTITUTO TECNOLÓGICO DEL EMBALAJE, TRANSPORTE Y LOGÍSTICA, Spain

Accelerating Innovation in Microfabricated Medical Devices, Moore4Medical

Type of Action: **IA - ECSEL**; Call H2020-ECSEL-2019-1-IA; Project no. 876190 Project duration: 2020-2023; Coordinator: PHILIPS ELECTRONICS NEDERLAND BV (PEN), Netherlands

Nanomaterials enabling smart energy harvesting for next generation Internet-of-Things, NANO-EH

Type of Action: **RIA**, Call: H2020-EIC-**FETPROACT**-2019, Project no. 951761; Duration: 2020-2023; Coordinator: UNIV COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK (UCCTYN), Ireland

Strategic and targeted support to incentivise talented newcomers to NMP projects under Horizon Europe, FIT-4-NMP

Type of Action: **CSA**; Call: H2020-NMBP-TO-IND-2020-singlestage; Project no.: 958255 Duration: 2021-2024; Start: 01 Jan 2021; Coordinator: INTELLIGENTSIA CONSULTANTS SARL (INT), Luxembourg;

Integrated Qubits Towards Future High-Temperature Silicon Quantum Computing Hardware Technologies - IQubits

Type of Action: **RIA**, call H2020-**FETOPEN**-2018-2019-2020-01, Project no. 829005 Project duration: 2019–2023; Coordinator: AARHUS UNIVERSITET (AU), Denmark

Artificial permittivity and permeability engineering for future generation sub wavelength analogue integrated circuits and systems, NANOPOLY

Type of action: **RIA**, H2020-**FETOPEN**-2018-2019-2020-01, Project no. 829061, Project duration: 2019 -2021; Coordinator: Thales SA

NANO components for electronic SMART wireless systems, NANOSMART

Type of Action: **RIA**; call H2020-**ICT**-2018-2; Project no. 825430, Project duration: 2019 – 2021; Coordinator: Thales SA, France

Spin Wave Computing for Ultimately-Scaled Hybrid Low-Power Electronics, CHIRON

Type of Action: **RIA**; call H2020-**FETOPEN**-1-2016-2017; Project no. 801055, Project duration: 2018-2021; Coordinator: Interuniversitair Micro-Electronica Centrum- IMEC, Belgium

Integrated Components for Complexity Control in affordable electrified cars - 3Ccar,

Type of action: **RIA**; Call: **ECSEL**-2014-1, Project no. 662192, Duration: 2015-2018; Coordinator: INFINEON TECHNOLOGIES AG (IFAG) AG, Germany

Crossbar of Microelectromechanical Selectors and Non-Volatile Memory Devices for Neuromorphic Computing, SelectX

H2020 Marie Skłodowska-Curie Actions- **Individual Fellowship**. Project no. 705957, Project duration: 2016 - 2018. Coordinator: IMT Bucharest

EURONANOFORUM 2019 - NANOTECHNOLOGY AND ADVANCED MATERIALS PROGRESS UNDER HORIZON2020 AND BEYOND-ENF2019

Type of action: **CSA**; H2020-IBA-LEIT-NMBP-Romanian- Presidency- 2018; Project no. 847673, Project duration: 1.02 2019 -30.09.2019

EURONANOFORUM 2019 12-14 June 2019, Palace of the Parliament, Bucharest, Romania

CESMIN, Cod SMIS2014+ 107894



www.imt.ro/CESMI

Proiect co-finanțat din Fondul European de Dezvoltare Regională prin Programul Operațional Competitivitate 2014-2020 (POC)

N/



New!

Open innovation test bed for developing safe nano-enabled bio-based materials and polymer bionanocomposites for multifunctional and new advanced applications, BIONANOPOLYS

Type of Action: IA; Call: H2020-NMBP-TO-IND-2020-twostage; Project no. 953206; Current Phase: Grant preparation; Duration: 48 months
Coordinator: INSTITUTO TECNOLÓGICO DEL EMBALAJE, TRANSPORTE Y LOGÍSTICA, Spain
IMT role: Partner - Dr. Oana NEDELCU; Number of partners: 27

Accelerating Innovation in Microfabricated Medical Devices, Moore4Medical

Type of Action: ECSEL-IA; Call H2020-ECSEL-2019-1-IA; Project no. 876190 Project duration: 2020-2023
Coordinator: PHILIPS ELECTRONICS NEDERLAND BV (PEN), Netherlands; IMT role: partner – Dr. Bogdan FIRTAT; Number of partners: 66

Nanomaterials enabling smart energy harvesting for nextgeneration Internet-of-Things, NANO-EH

Type of Action: RIA; Call: H2020-EIC-FETPROACT-2019; Project no. 951761; Duration: 2020-2023
Coordinator: UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK (UCCTYN), Ireland
IMT role: Partner - Dr. Mircea Dragoman; Number of partners: 10

Keywords: Technology management, Artificial intelligence, intelligent systems, multi agent systems, Computer and information sciences, Electrical engineering, Electronic nano engineering, Information engineering, Energy storage, Energy storage technologies
The project is proposing to develop new solution for: Energy harvesting, energy storage, energy supply for Internet-of-Things, smart nanomaterials, hafnium zirconium oxide, 2D MoS₂, nanocellulose, 4IR, Connected Health
IMT activity: ● End-User requirements and specification for energy harvester and energy storage devices and demonstrators.
● Atomistic and meso-scale design and modelling of HfZrO and 2D MoS₂. ● Design and simulation of energy harvester and energy storage devices;
● Design of all demonstrators; ● Life Cycle Analysis and Life Cycle Cost Analysis.

CESMIN, Cod SMIS2014+ 107894

Strategic and targeted support to incentivise talented newcomers to NMP projects under Horizon Europe, FIT-4-NMP

Type of Action: CSA; Call: H2020-NMBP-TO-IND-2020-singlestage; Number: 958255 Duration: 2021-2024; Start Date: 01 Jan 2021

Coordinator: INTELLIGENTSIA CONSULTANTS SARL (INT), Luxembourg; IMT role: Partner - Dr. Carmen Moldovan; Number of partners: 10



FIT-4-NMP's overall objective is to increase the participation of talented newcomers from underrepresented regions in NMP projects in Horizon Europe, as compared to Horizon 2020. Talented newcomers are promising innovation organisations – especially SMEs – that have not participated in H2020 NMP.

FIT-4-NMP will be undertaken by a strong consortium with partners located among many of the EU member states with the lowest participation in H2020 NMBP. Also, these partners represent “umbrella” organisations with extensive networks to innovative NMP organisations and talented newcomers in their regions.

EURONANOFORUM 2019 - Nanotechnology and advanced materials progress under Horizon2020 and beyond-ENF2019

H2020-IBA-LEIT-NMBP-Romanian- Presidency- 2018, H2020- CSA; Project no. 847673, Project duration: 2019; IMT role: Coordinator: Dr. Adrian Dinescu;

Conference website: <https://www.euronanoforum2019.eu/>

12-14 June 2019, Palace of the Parliament, Bucharest, Romania

The project and the conference made an impact of the visibility of nanotechnology and advanced materials, by presentation of the state of the art and trends. It increased also the awareness of H2020 NMBP programme, particularly in Romania. It provided an opportunity to network between European R&D performers together with Romanian experts and entities.

EuroNanoForum 2019 in figures:

- approx. 500 delegates, with 128 speakers and moderators
- 3 plenary sessions and 15 parallel sessions with 85 oral presentations, 8 Workshops
- 89 posters, 16 posters in the student sessions
- 30 projects applying for the Best H2020 project in NMBP Competition
- 180 meetings between 68 delegates from 19 countries in the Brokerage sessions
- 22 exhibitors in the Industrial and Research Exhibition; - 13 media partners



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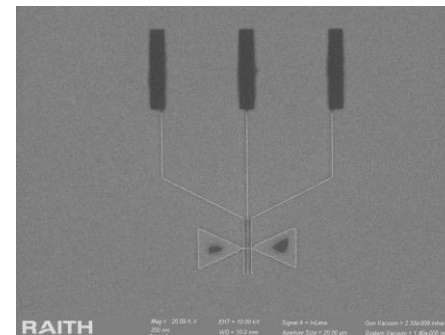
Integrated Qubits Towards Future High-Temperature Silicon Quantum Computing Hardware Technologies - IQubits

Type of Action: RIA; call H2020-FETOPEN-2018-2019-2020-01; Project no. 829005 Project duration: 2019–2023

Coordinator: AARHUS UNIVERSITET (AU), Denmark; **IMT role:** partner, Dr. A. Müller; **Number of partners:** 6

Keywords: Electrical and electronic engineering: semiconductors, components, systems, Electronic properties of materials, surfaces, interfaces, nanostructures, etc, Solid state materials

IQubits is a collaborative Research and Innovation Action (RIA) addressing the development and experimental demonstration of integrated quantum bits (qubits) and control and readout circuits in commercial silicon semiconductor technology, as the enabling fundamental building blocks for the implementation of the future emerging Quantum Computing (QC) hardware technologies.



IMT activity: Qubit and Qubit IC Testing and Test Setup Development; Gate width and channel width reduction; Si and III-N 10nm qubit fabrication; Cryogenic measurement set-up (to 110 GHz & 4 K); Design and Fabrication of Standalone Scaled Si and III-N Qubits.

Spin Wave Computing for Ultimately-Scaled Hybrid Low-Power Electronics, CHIRON

Type of action: RIA, H2020 FET OPEN; call H2020-FETOPEN-1-2016-2017; Project no. 801055, Project duration: 2018-2021

Coordinator: Interuniversitair Micro-Electronica Centrum- IMEC, Belgium **IMT role:** Partner - Dr. Alexandru Müller (alexandru.muller@imt.ro)

Number of partners: 9

Keywords Nanoelectromechanics, Nanomagnetism, Hardware design and integration, Electrical and electronic engineering: semiconductors, components, systems; Spin waves; Majority gate; Wave computing; Magnetoelectric effect; multiferroics; Nanoelectromechanical resonator; Magnonics

CHIRON targets a proof of principle of the essential elements for spin wave computing by an interdisciplinary approach joining partners with expertise in material science, physics, nano-manufacturing, electrical engineering, device simulation, and circuit design. CHIRON will fabricate basic logic gates, such as inverters and majority gates, demonstrate their operation, and assess their performance. As transducers between the CMOS and spin wave domains in hybrid circuits, CHIRON will develop magnetoelectric and multiferroic nanoresonators, based on nanoscale bulk acoustic resonators, which bear promise for high energy efficiency and large output signal. The targeted lateral scale (100 nm) and resonance frequency (>10 GHz) bring such resonators to the frontier of nano-electromechanical systems (NEMS). This technological proof of principle is complemented by the design of digital hybrid spin wave–CMOS circuits that show the advantages of spin wave computing and can be integrated into a CMOS environment.

IMT activity: Transducer and waveguide design and device manufacturing;

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Artificial permittivity and permeability engineering for future generation sub wavelength analogue integrated circuits and systems, NANOPOLY

Type of action: **RIA, H2020-FETOPEN-2018-2019-2020-01**, Project no. 829061, Project duration: 2019 -2021

Coordinator: Thales SA; IMT role: Partner - Dr. Mircea Dragoman; Number of partners: 8

Keywords Communication technology, high-frequency technology, Nanoelectronics, Nanomaterials, semiconductors, components, systems; 2D materials, FETs, 3D integration, reconfigurable antenna, TMDC, high frequency, mmwave, RFIC, microwave devices, Nano Rx / Tx modules, Radar

NANOPOLY proposes a ground-breaking yet cost effective method to extend our control over impedance and parasitic phenomena in monolithic circuit components by independently tuning electric permittivity and magnetic permeability of the integrated layers to values far beyond what nature can provide. This approach will re-define all components used in existing analogue circuit design regardless of technology. NANOPOLY will implement this concept on existing technology such as SiGe and will also employ novel two dimensional materials characterized by high mobility in order to complement minimal thickness and transferability with impedance engineering obtaining unprecedented performance of electronic components. This scheme, i.e. the meta-layers complemented with 2D materials aims at providing an entirely novel concept that of meta-electronics that promise a nano sized circuit platform with a new performance envelope, useful in all future analogue applications such as miniaturized consumer electronics, health monitoring, high-end THz applications e.t.c.

IMT activity: Silicon meta circuits and 2D based nano modules; meta-layer performance;

NANO components for electronic SMART wireless systems, NANOSMART

Type of Action: **RIA; call H2020-ICT-2018-2**; Project no. 825430, Project duration: 2019 – 2021; Coordinator: Thales SA, France

IMT role: partner, Dr. Mircea Dragoman; Number of partners: 9

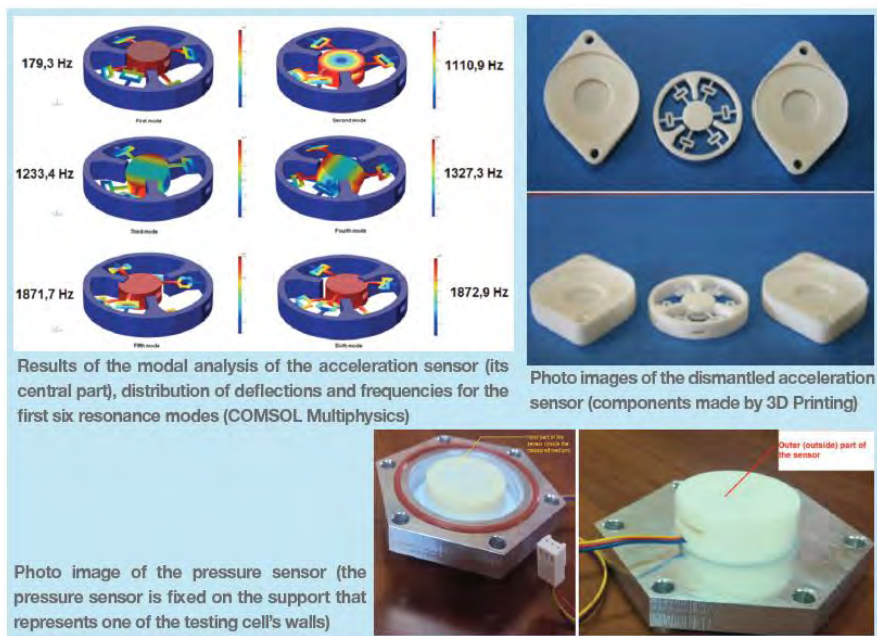
Keywords: Systems engineering, sensorics, actorics, automation, Sensor Technology and Components; Ultra-low power nano component, NEMS, Nano Switch, Nano Antenna, Nano sensor, Nanocharacterization, CNT, 2D nanomaterials, Nano integration

The objective of NANOSMART is to develop technology for future generation, smart monolithic Transmit / Receive front-end ICs capable of RF switching, power management, high efficiency, at a fraction of the footprint and cost of current solutions. NANOSMART addresses this need by developing a new technological platform based on CNT and 2D material electronics (the two most promising technologies to replace Silicon electronics in the future). NANOSMART develops unique concepts already proven by the consortium such as deep sub-wavelength antennae, CNT NEMS for RF switching, nano electromechanical reconfigurable filters and multiple FET technologies.

IMT activity: Test and measurement activities; filter and switch design and modelling power management circuit design and modelling; CNT and 2D antennae components ~~technology~~; Exploiting IMT's new infrastructure **CENASIC** (contract POS CCE, O2.2.1, numarul

254/28.09.2010, Cod SMIS-CSNR: 14040)

CESMIN, Cod SMIS2014+ 107894



Integrated Components for Complexity Control in affordable electrified cars - 3Ccar,

ECSEL - RIA; Call: ECSEL-2014-1, No: 662192, Duration: 2015-2018

Coordinator: INFINEON TECHNOLOGIES AG (IFAG) AG, IMT role: Partner - PhD, Phys.

Eng. Victor Moagăr-Poladian

Number of partners: 47

Keywords: Embedded systems, Electronic components, Semiconductors

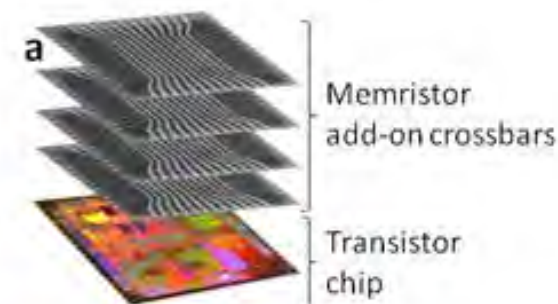
IMT activity: Thermal simulations and thermal management of structure; MEMS integration and demonstration; Test of encapsulation structures and thermal insulation tests (use of 3D printing techniques);

Crossbar of Microelectromechanical Selectors and Non-Volatile Memory Devices for Neuromorphic Computing, SelectX

H2020 Marie Skłodowska-Curie Actions- Individual Fellowship; Project no. 705957, Project duration Coordinator: National Institute for Research and Developments in Microtechnologies-IMT Bucharest Coordinator ("Supervisor"): Dr. Alexandru Müller

Researcher: Dr. Gina Adam

The project proposes the use of NEMS relays as selector devices for memristor crossbars and pursues the simulation, fabrication and characterization of a proof-of-concept crossbar of monolithically integrated memristor/NEMS device.



<https://www.imt.ro/selectX/>

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Moore4Medical



Enabling “Moore for Medical”

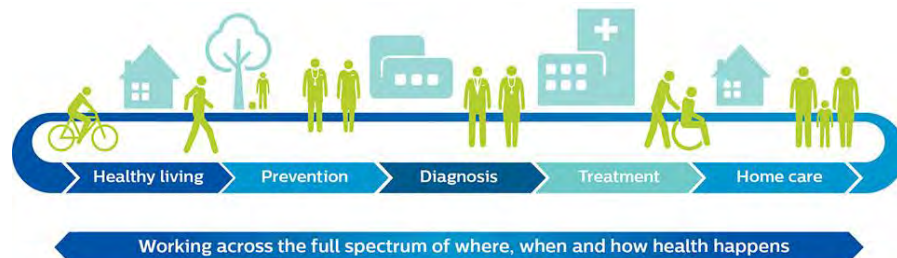
// “Open Technology Platforms
for Medical Devices” //



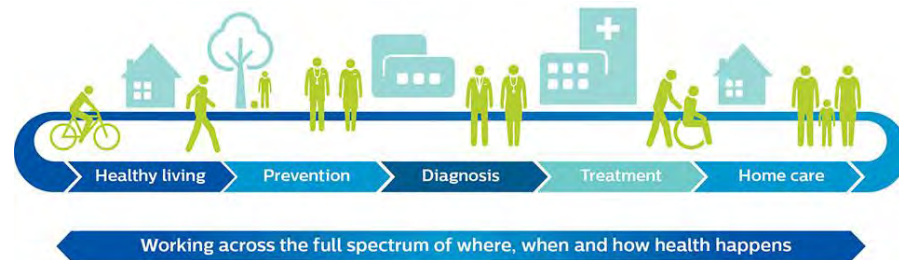
Institutul Național de Cercetare – Dezvoltare pentru Microtehnologie

Bogdan Fîrtat

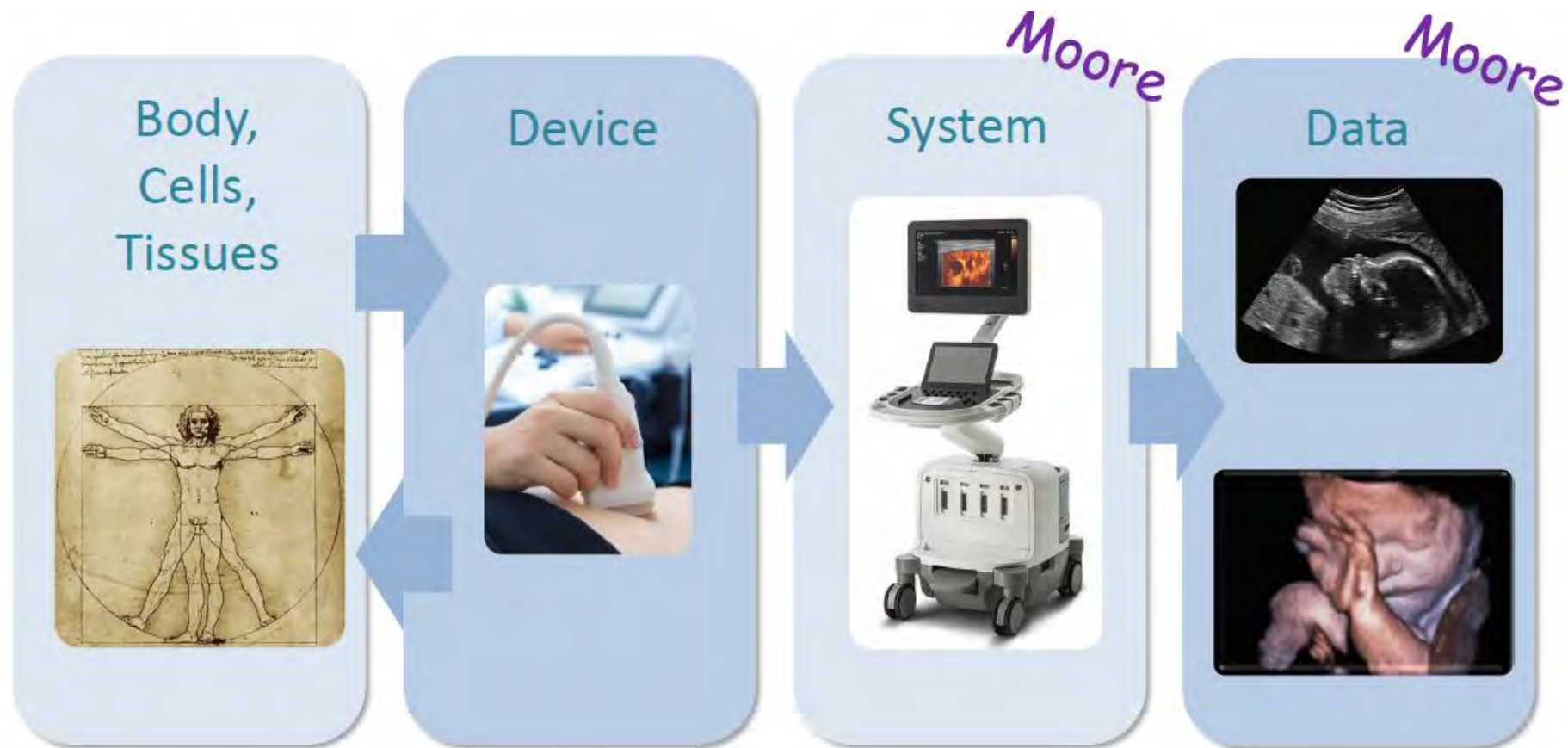
ECSEL – Electronic Components and Systems for European Leadership Joint Undertaking

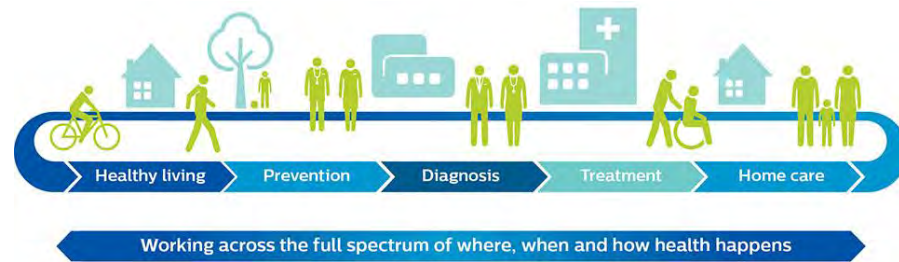


- **Principiul ECSEL:** proiecte cu valoare adăugată pe *value chain* (concepte de cercetare transferate în tehnologii și produse cu TRL ridicat – TRL 8-9).
- Modelul general de finanțare ECSEL:
 - IMM/Cercetare/Universități: 50% fonduri publice (25% naționale, 25% de la Comisia Europeană) / 50% cofinanțare;
 - Întreprinderi mari: 30% fonduri publice (15% naționale, 15% de la Comisia Europeană) / 70% cofinanțare;
- Bugetele proiectelor ECSEL în H2020: câteva miliarde de euro;
- Per ansamblu, bugetul Moore4Medical conține aproape 70% cofinanțare privată, ceea ce confirmă angajamentul partenerilor industriali în tematicile de cercetare propuse;
- Programul ECSEL va continua și sub umbrela Orizont Europa.

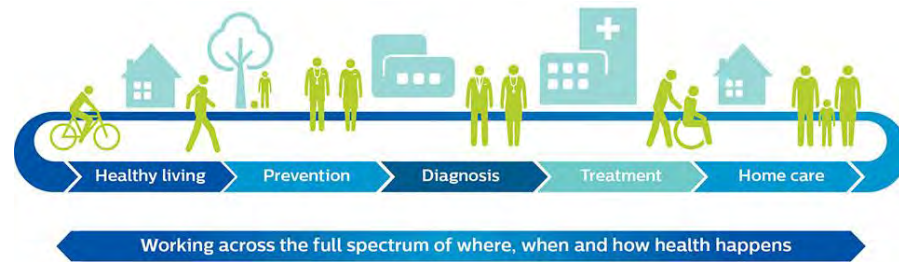


Proiectul ECSEL Moore4Medical va accelera inovația în dispozitivele medicale electronice



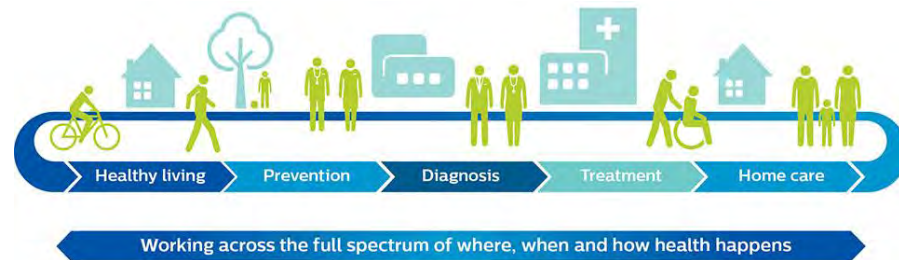


- Consorțiul Moore4Medical reunește **68 de parteneri europeni**, mulți dintre ei fiind companii mari;
- Coordonatorul proiectului: Philips Electronics, Olanda;
- IMT-București este singurul partener român;
- **Principalele acțiuni din Moore4Medical:**
 - **Dispozitive implantabile;**
 - **Organe-pe-chip;**
 - „*Drug adherence*” – asigurarea respectării planului de tratament;
 - O nouă generație de dispozitive medicale cu ultrasunete;
 - Chirurgia fără raze X;
 - Monitorizarea continuă a pacienților.



- **Implementarea proiectelor ECSEL în România:**

- Finanțare națională gestionată prin Fonduri Structurale (sinergii cu acțiunile CDI europene);
- Nu este necesară cofinanțarea pentru instituții publice de cercetare;
- Mecanisme de finanțare mai greoaie, fără flexibilitatea necesară unui parteneriat european;
- Se încheie două contracte de finanțare separate și ușor necorelate (unul cu ECSEL-JU, unul cu OI POC);
- Recent s-au făcut pași înainte în corelarea finanțării naționale cu sistemul ECSEL-JU.



Vă mulțumesc!

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bogdan.firtat@imt.ro

<https://www.imt.ro>

<https://moore4medical.eu>